

REMARKS

In view of the remarks put forth below, the Examiner is requested to withdraw the rejections and allow Claims 1, 3-8, 10, 11, 13, 14, 16-20, 41-56, the only claims pending and under examination in this application.

Claims 41 and 54 are amended to recite “consisting of” and “a surfactant.” Support for these amendments is found throughout the specification, for example, at page 11, paragraph 31.

Applicant notes that Claim 17 is not rejected by the Examiner. Since Claim 17 is not cited in the rejections below, it is assumed that Claim 17 is allowed.

Claim Rejection under 35 U.S.C. §103, Harmon and Klopping in view of Beaty as explained by Bath

Claims 1, 3-8, 10, 11, 13, 14, 16, 18-20, and 41-56 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Harmon (U.S. Patent No. 3,558,787) and Klopping (U.S. Patent No. 3,789,122) in view of Beaty (U.S. Patent No. 5,634,959), as explained by evidence of Bath (U.S. Patent No. 6,083,293). To the extent that this rejection applies to amended Claims 41 and 54, it is respectfully traversed.

In maintaining this rejection over the Applicant’s prior arguments that the Experimental section provides objective evidence of unexpected results, the Examiner asserts: “the examples cited as evidence are of specific ingredients, but there is no claim to the combination of the Applicant’s Green Thumb fertilizer with specific pesticides known to be phytotoxic-inducing.” Further: “The results are not surprising. Applicant’s definition of phytotoxicity-reducing is seen in the experimental section as a measure of overall vigor and appearance of sprayed plants. Any one in the horticulture or agronomic arts utilizing pesticides to provide crops also uses fertilizers to enhance overall vigor and appearance.” (Office Action, page 8, lines 12-20).

It appears that the Examiner has maintained this rejection in part on faulty reasoning that: 1) the present claims do not reflect the working examples; and 2) the results are expected because fertilizers are known to enhance overall vigor and appearance of plants. Applicant will address both points below.

Claim 1 recites:

“A pesticide composition comprising:

- (a) a phytotoxicity-inducing synthetic pesticide;
- (b) an assimilable carbon-skeleton energy component;
- (c) a water soluble macronutrient;
- (d) a water soluble micronutrient; and
- (e) a vitamin/cofactor component,

wherein said composition reduces pesticide-induced phytotoxicity of a plant.”

As such, five specific components (a) - (e) are required to produce a claimed composition that reduces pesticide-induced phytotoxicity of a plant. Applicants submit that all components are supported in the working examples, as evidenced below.

In the working examples, four pesticides with a wide range of properties were utilized to prepare compositions. Since each of the pesticides demonstrated a phytotoxic effect in the positive control experiments, they exemplify “phytotoxicity-inducing synthetic pesticide” as claimed. A summary of the properties of the pesticides of the working examples is given below (www.dropdata.org for a database of pesticides):

- a) Kryocide is an inorganic insecticide (sodium aluminofluoride) that affects metabolic processes and is a non-specific feeding blocker;
- b) Kocide is an inorganic bactericide-fungicide ($\text{Cu}_2\text{Cl}(\text{OH})_3$) with broad spectrum fungicidal activity through preventing spore germination;
- c) Bravo WS is a substituted aromatic fungicide (chlorothalonil) that inhibits sulfur-containing enzymes;
- d) Orbit is an organic fungicide (propiconazole) that inhibits ergosterol synthesis.

As such, these pesticides exemplified in the working examples represent a wide range of structures, activities and mechanisms of action, and are commensurate in scope with “phytotoxicity-inducing synthetic pesticide” in the claimed composition.

Furthermore, enclosed herein is a breakdown (Exhibit 1) of the components of Green Thumb used to prepare the pesticide compositions of the working examples (Expt. IIA-D, pages 35-41). As evidenced by Exhibit 1, Green Thumb comprises exemplary components (b)-(e): an

assimilable carbon-skeleton energy component (corn syrup), a water soluble macronutrient (calcium, magnesium, potassium, urea), a water soluble micronutrient (zinc, manganese, iron) and a vitamin/cofactor component (vitamin premix).

As such, the pesticides in combination with Green Thumb provide all of the components (a)-(e) of Claim 1. Finally, Claim 1 recites that the “composition reduces pesticide-induced phytotoxicity of a plant.” This element is directly supported by the results of experiments IIA – IID, as demonstrated below. Thus, contrary to the Examiner’s reasoning, the present claims DO reflect the effects supported by the examples. In addition, the Applicant maintains that the claimed compositions are more than the predictable use of prior art elements according to their established functions, as will be further demonstrated below.

Objective evidence of an unexpected reduction in pesticide-induced phytotoxicity, is supported in the Experimental section (pages 35-41) and discussed in the specification (page 6, paragraph 18). An analysis of the data (see table below), demonstrates a negative change in overall vigor and appearance for plants treated with only pesticides, relative to control plants, i.e., a pesticide-induced phytotoxic effect. The pesticide-induced phytotoxicity was reduced by 78 to 100% by the addition of the components of Green Thumb to the compositions, in experiments IIA - IID.

Expt	II A (page 36)		II B (page 37)		II C (page 39)		II D (page 40)	
pesticide	KYROCIDE		KOCIDE		BRAVO WS		ORBIT	
Green Thumb	-	+	-	+	-	+	-	+
change in appearance	-2.75	0	-3	-0.25	-3.75	-0.25	-4.5	-1
% reduct. in phytotox.	100%		92%		93%		78%	

The same set of experiments was performed using sucrose instead of Green Thumb (Expt. IA-ID, see summary below). The Examiner pointed to the results of sucrose and surfactant alone as evidence of an expected increase in vigor and appearance.

Expt	I A (page 30)		I B (page 31)		I C (page 33)		I D (page 34)	
pesticide	KYROCIDE		KOCIDE		BRAVO WS		ORBIT	
Sucrose	-	+	-	+	-	+	-	+
change in appearance	-2.5	-0.75	-3	-1.5	-3.75	-1.5	-4.75	-2.5
% reduct. in phytotox.	70%		50%		60%		47%	

It appears that the Examiner has maintained this rejection in part on faulty reasoning that the results of the working examples are expected because fertilizers are known to enhance overall vigor and appearance of plants. However, as summarized above, the results of the working examples of the claimed composition (Expt. IIA-IID, 78-100%) are clearly unexpectedly superior to those achieved with just sucrose in Expt. IA to 1D (i.e., 47 to 70%). In addition, this reasoning fails to recognize that the measurements of overall vigor and appearance in the working examples are in the unique context of the reduction of pesticide-induced phytotoxicity.

As such, reduction of pesticide-induced phytotoxicity as exemplified in the working examples and the specification (page 6, paragraph 18) is a protective action of the claimed composition, and is not necessarily an expected result of a growth enhancing action of a fertilizer on a healthy plant, as suggested by the Examiner. Thus, the Examiner has maintained this rejection in part on faulty reasoning that equates the action of fertilizer on healthy plants with the phytotoxicity reducing activity of the presently claimed composition.

As such, Applicant contends that sufficient objective evidence has been presented to demonstrate that the claimed compositions are more than merely the predictable use of prior art elements according to their established functions. Accordingly, the Applicant submits that the claimed compositions are not obvious over the references cited by the Examiner, and respectfully request that this rejection be withdrawn.

Additionally, the Applicant contends that a *prima facie* case of obviousness has not been established because it would not be obvious to one of ordinary skill in the art to select the combination of specifically claimed components (a)-(e) from the wide range of possibilities, in the manner suggested by the Examiner.

In *KSR*, the Supreme Court made clear that, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. . . . it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR*, 127 S. Ct. at 1741. An invention is not obvious under 35 U.S.C. § 103, “where the prior art [gives] either no indication of which parameters [are] critical or no direction as to which of many possible choices is likely to be successful.” *Merck & Co., Inc. v. Biocrraft*

Labs., Inc., 10 USPQ2D (BNA) 1843 (Fed. Cir. 1989), quoting *In re O'Farrell*, 7 USPQ2D (BNA) 1673 (Fed. Cir. 1988).“ [R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 127 S. Ct. at 1740-1741, quoting *In re Kahn*, 441 F.3d at 988.

In making this rejection, the Examiner cites Harmon and Klopping for providing compositions containing pesticides and fertilizers. For specific fertilizer components, the Examiner cites Beaty for disclosing fertilizers and nutrients that are useful to apply to plants; as explained by Bath which discloses the further components of a fertilizer. The Examiner asserts:

“One would also be motivated to add fertilizer because both Harmon & Klopping so instruct, and Beaty shows what constitutes fertilizer for plant application, further specified as to the breakdown of components shown by Bath....It would be obvious to vary the form of each ingredient to optimize the effect desired, depending upon the particular species and application method of interest, reduction of toxicity, cost minimization & enhanced plant growth effects.” (Office Action, page 4, lines 5-14).

Harmon and Klopping are silent with respect to phytotoxicity, and phytotoxicity inducing pesticides. Klopping (columns 29-31) and Harmon (columns 4-6) teach long lists of pesticides, but provide no guidance to select any “phytotoxicity-inducing synthetic pesticide” out of the wide range of possibilities. Further, Harmon and Klopping both make only general mention of fertilizers (col. 4, line 52 and col. 29, line 45, respectively). As such, Harmon’s and Klopping’s general mention of fertilizers provides no specific instruction or guidance to make particular selections of types of fertilizers, or fertilizer components, for phytotoxicity-reducing pesticide compositions from a wide range of possibilities, no understanding of which fertilizers or fertilizer components would be useful, or what the desired properties of the compositions would be.

Further, Beaty and Bath are cited solely for their teachings of fertilizers, and for a breakdown of the components of a seaweed extract. Beaty and Bath are silent with respect to pesticides and phytotoxicity-reducing pesticidal compositions. Beaty is directed towards fertilizer mixtures including seaweed extracts and fish solubles. Bath provides a breakdown of the components of a seaweed extract that includes over 70 individual components (column 6, table). Although Beaty and Bath provide a long list of ingredients for fertilizers, they provide no

specific instruction or guidance to make particular selections of specific components from the wide range of possibilities, no understanding of which components would be useful for pesticidal compositions, or what the desired properties of the compositions would be. As such, Beaty and Bath teach an almost infinite number of possible combinations of ingredients, with no specific guidance of which combinations would be successful.

As such, none of the cited references give any indication of which parameters are critical, or any direction regarding the phytotoxicity of pesticide compositions, or reduction of the same. Furthermore, the cited references give a wide range of possible pesticides, and fertilizer ingredients, plus a nearly unlimited number of possible combinations of components.

The Applicants submit that, based on the cited art, an impermissible “obvious to try” standard has been applied by the Examiner in an attempt to argue the obviousness of the claimed invention. The “obvious to try” standard for obviousness was addressed by the Supreme Court in *KSR*. According to the Supreme Court, “When there is a design need or market pressure to solve a problem and there are a finite number of identifiable, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”¹

This tenet has been followed in several post-*KSR* decisions published by the Federal Circuit.² For example, the Federal Circuit explained in *In re Kubin* that “the Supreme Court’s admonition against a formalistic approach to obviousness in *KSR* actually resurrects this court’s own wisdom in *In re O’Farrell*. This court in *O’Farrell* cautioned that ‘obvious to try’ is an incantation whose meaning is often misunderstood.”³ The Federal Circuit then reiterated the situations provided in *O’Farrell* where ‘obvious to try’ is erroneously equated with obviousness under § 103:

¹ *Id.* at 402.

² See, e.g., *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, 520 F.3d 1358 (Fed. Cir. 2008); *Eisai Co. v. Dr. Reddy’s Laboratories*, 533 F.3d 1353 (Fed. Cir. 2008); *Pfizer, Inc. v. Apotex, Inc.* 488 F.3d 1377 (Fed. Cir. 2007); *Takeda Chemical Industries Ltd. v. Alphapharm Pty. Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007).

³ *In re Kubin*, 561 F.3d 1351, 1359 (Fed. Cir. 2009).

One of *O'Farrell's* impermissible "obvious to try" situations occurs where "what would have been "obvious to try" would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." ⁴

Applicants assert that this impermissible "obvious to try" situation applies to the present case, because, as in *In re O'Farrell*, the art gives no direction as to which of many possible choices (in this case, a wide range of possible ingredients for pesticide compositions) was likely to be successful in claimed compositions, which reduce pesticide-induced phytotoxicity of a plant.

Not only do the cited references provide no guidance with respect to selecting components of phytotoxicity reducing pesticide compositions, the wide range of possible pesticides, fertilizers, and components of fertilizers given in the references, makes for an almost unlimited number of possible combinations. As such, Applicants submit that the cited art does not lead one of ordinary skill in the art to a finite number of identified, predictable combinations of components, to arrive at the five specific claimed elements of the claimed composition.

Applicant respectfully submits that it would not be obvious to select the five specific claimed elements, based on the teachings of the cited references. The Examiner's mere statement that "it would have been obvious to vary the form of each ingredient to optimize the effect desired" is insufficient to support a prima facie case of obviousness.

Harmon and Klopping both make no mention of phytotoxic pesticides, only make general mention of fertilizers, and fail to provide any specific teachings, instruction or guidance with respect to the selection of components from a wide range of possibilities. Beaty and Bath make no indication of which fertilizer components are critical and no direction as to which of many possible choices is likely to be successful.

⁴ *Id.* at 1359 (citing *In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988)).

Since the cited references provide no indication of which parameters are critical and no direction as to which of many possible combinations of elements is likely to be successful, it would not be obvious to one of ordinary skill in the art to select the five specific claimed elements (a)-(e), as suggested by the Examiner.

Thus, the impermissible type of "obvious to try" suggestion of Harmon and Klopping in view of Beaty, as explained by Bath, does not render the invention claimed in the present application obvious. As such, a *prima facie* case of obviousness has not been established. Accordingly, the Examiner is respectfully requested to withdraw this rejection of Claims 1, 3-8, 10, 11, 13, 14, 16, 18-20 and 41-56.

Claim Rejection under 35 U.S.C. §103, Harmon or Klopping in view of Bath

Claims 1, 3-8, 10, 11, 13, 14, 16, 18-20 and 41-56 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Harmon (U.S. Patent No. 3,558,787) or Klopping (U.S. Patent No. 3,789,122) in view of Bath (U.S. Patent No. 6,083,293). To the extent that this rejection applies to amended Claims 41 and 54, it is respectfully traversed.

The arguments presented in the rejection above with respect to objective evidence of unexpected results, and the cited references Harmon, Klopping and Bath may also be applied to this rejection.

As reviewed above, Applicant contends that sufficient objective evidence has been presented to demonstrate that the claimed compositions are more than merely the predictable use of prior art elements according to their established functions. The claimed element of reduction in pesticide-induced phytotoxicity of a plant is directly supported by the unexpected results of the objective data presented in the examples. Accordingly, the Applicant submits that the claimed compositions are not obvious over the references cited by the Examiner, and respectfully requests that this rejection be withdrawn.

In addition, the Applicant contends that a *prima facie* case of obviousness has not been established because an impermissible "obvious to try" standard has been applied by the

Examiner in an attempt to argue the obviousness of the claimed invention. As such, the cited art does not lead one of ordinary skill in the art to a finite number of identified, predictable combinations of components to arrive at the claimed composition.

As discussed above, Harmon's and Klopping's general mention of fertilizers provides no specific instruction or guidance to make particular selections of components for pesticidal compositions from a long list of ingredients, and no understanding of which components would be useful, or what the desired properties of the fertilizers would be.

Bath merely provides a breakdown of the components of a seaweed extract for fertilizer that includes over 70 individual components (column 6, table). As such, although Bath provides a long list of fertilizer ingredients, it provides no specific instruction or guidance to make particular selections of the components from the list, no understanding of which components would be useful in pesticidal compositions, or what the desired properties of the compositions would be.

Since the cited references provide no indication of which parameters are critical and no direction as to which of many possible choices is likely to be successful, it would not be obvious to one of ordinary skill in the art to select the combination of the five claimed elements (a)-(e), from the wide range of possibilities, as suggested by the Examiner.

Thus, the "obvious to try" suggestion of Harmon and Klopping in view of Bath, does not render the invention claimed in the present application obvious. As such, a prima facie case of obviousness has not been established. Accordingly, the Examiner is respectfully requested to withdraw this rejection of Claims 1, 3-8, 10, 11, 13, 14, 16, 18-20, and 41-56.

CONCLUSION

The Applicant submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-0815, order number YAMA-009.

Respectfully submitted,
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Enclosures: Exhibit 1_Green Thumb.pdf

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